

Assessment

The following activities are to review and assess what students have learned. The activities provide opportunities for students to demonstrate their understanding of what they have learned in a fun way.

Concept

- Applying knowledge of the connections between shorebirds and the ecosystems they share with people and other plants and animals demonstrates understanding of the information and the ability to use it.

Activities

Wild Spellers

(lower elementary)

Students play a vocabulary-building game in which they match a word to its definition and then try to spell the word correctly.

Shorebird Jeo-Bird-Y

(upper elementary/middle school, upper middle school/high school)

Students review information they have learned in other shorebird activity units in this version of the popular game show “Jeopardy.”

Shorebird Speeches and Listening Tests

(upper elementary/middle school, upper middle school / high school)

Students design a shorebird speech to present to other students in their class, another class, or other audience.

Peeps and Predators

(lower elementary, upper elementary/middle school)

Students review shorebird information they learned on their field trip by pretending to be either a shorebird or a predator and alternately chasing each other in response to true or false shorebird statements.

Shorebird Bubble Map

(upper elementary/middle school, upper middle school/high school)

By creating a bubble or concept map, students explore the interconnectedness of the environmental factors within a shorebird’s habitat and the shorebird’s characteristics of behavior, adaptations, and breeding biology.



Wild Spellers

*Adapted with permission from
Quinlan, "Alaska Wildlife Week"*

Grade Level: lower elementary

Duration: time to review vocabulary words, then 30 minutes for the game

Skills: spelling, vocabulary, and team building

Subjects: language arts and science

Concept

- Applying knowledge of the connections between shorebirds and the ecosystem they share with people and other plants and animals demonstrates understanding of the information and the ability to use it.

Overview

Students play a vocabulary-building game in which they match a word to its definition and then try to spell the word correctly.

Objectives

After this activity, students will be able to:

- Accurately spell shorebird vocabulary words selected from the educator's guide glossary.
- Correctly define shorebird vocabulary words selected from the educator's guide glossary.

Vocabulary

Since this is a review and sharing activity, there are no specific vocabulary words.

Materials

- One set of shorebird vocabulary cards, made according to the instructions below.

Introduction

Since this is a review and sharing activity, there is no introductory material.

Activity Preparation

1. Select 30 words from the educator's guide glossary or those used in the shorebird activity units your class is familiar with.
2. Write each word and its definition on the same side of an index card. Or hand out an index card to each student in the class and ask students to make the selections and write the cards.

Procedure

1. Review the vocabulary words with the students or provide time for review before playing this game.
2. Divide the class into two teams and have them line up. Each team should pick a shorebird name for itself. In this example, the teams are identified as "Sanderling" and "Dunlin."
3. Shuffle the cards and place them in a drawing pile. Have one of the "Dunlins" pick up a card and read only the definition out loud.
4. The "Sanderlings" must try to guess the word that matches the definition within a time limit. Teammates should huddle together to confer. The first member of the team announces the team's answer. If correct, the team wins one point.
5. Now the team attempts to spell the word. If correct, the team wins one more point. This word is then placed in a discard pile. The person at the front of each line moves to the end of the line.
6. Now the second member of the "Dunlin Team" picks a card from the pile and reads the definition aloud.

7. "Sanderlings" guess again, and if correct, they try to spell the vocabulary word. The person at the front of the line moves to the back again. This process continues until an incorrect answer is given.
8. When a wrong answer or spelling is given, the team holding the card gives the right answer. Play then turns to the other team.
9. The first "Sanderling" draws a word card and reads the definition aloud for the "Dunlins" to guess.
10. The game proceeds until no word cards remain in the drawing pile. The team with the most points wins.

Additional Activities



Cultural Connection

For extra points, add vocabulary word cards with words from different languages. Include on the card what place the word comes from. For example, Kōlea is the Hawaiian word for Pacific Golden-Plover.

Vocabulary Themes

Write the vocabulary words on the chalkboard. Have each student group these words (migration, breeding, food habit, habitat, etc.) into shorebird themes on his or her own piece of paper. They should use all the words. Did all the students group the words the same way? Could some words be placed under more than one category?

Shorebird Jeo-Bird-Y

Grade Level: upper elementary/
middle school, upper middle school/
high school

Duration: one or two 45-minute
class periods

Skills: team building, vocabulary,
and communication

Subjects: science and social studies
(geography)

Concept

- Applying knowledge of the connections between shorebirds and the ecosystem they share with people and other plants and animals demonstrates understanding of the information and the ability to use it.

Overview

Students review information they have learned in other shorebird activity units in this version of the popular game show “Jeopardy”.

Objectives

After this activity, students will be able to:

- Correctly answer a series of review questions on shorebird topics.

Vocabulary

Since this is a review and sharing activity, there are no specific vocabulary words.

Materials

- List of review questions (or use the ones included here)
- Watch with second hand or stopwatch

Introduction

Since this is a review and sharing activity, there is no introductory material.

Activity Preparation

1. Compose a set of shorebird review questions you feel your students should now be able to answer. Choose questions from the list included in this activity or write your own.
2. Decide on the order in which the groups will take their turns and if this will be an “open-book” activity.

Procedure

1. Divide the class into “flocks” of three or four students.
2. Tell the students that you will read a question about shorebirds aloud to the class. The first group will have 45 seconds (or whatever time limit you decide on) to come up with the correct answer. They should not shout out the answer but can quietly discuss it among the members of their team. When time is up, or when the group has the answer, the teacher will choose one person from the group to explain the answer.
3. If the answer is correct, “flock one” gets a point. The play then proceeds to “flock two” which has the same amount of time to answer the next question. If the first “flock’s” answer is incorrect, the second “flock” has 30 seconds to come up with the correct answer to the same question. If they are correct, they earn the point. If “flock two” cannot come up with the correct answer either, then “flock three” has ten seconds to earn the point by answering the question. If “flock three” is incorrect, start over by giving “flock four” 45 seconds to answer a new question.

Note: The teacher should always select the student to answer the questions. This ensures that all the members of the group are cooperating with each other, looking for the answer, or teaching each other the answer. Scramble the subject order of the questions. Mix simple questions with harder ones. When you read the questions out loud, write any key words up on the board.

4. Continue the game until the time is up. Consider adding “bonus rounds” to give “flocks” a chance to improve their scores.

Older Students: To make this more challenging, play the game like the traditional “Jeopardy” game by reading the answers and asking teams to tell you the question.

Additional Activities



Cultural Connection

From the cultural profiles, students write clue(s) that relate to places along a shorebird’s migration route. Have the students give the class an overview of the culture, with the understanding that when the class plays the Mystery Shorebird Jeo-Bird-Y, there will be at least one clue related to the culture.

Mystery Shorebird Jeo-Bird-Y

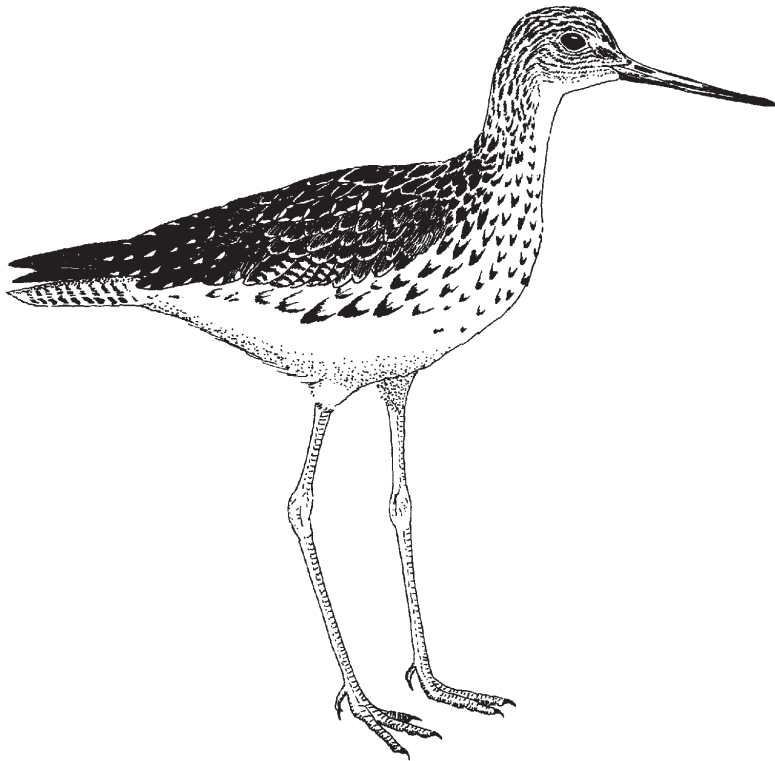
Select a set of local shorebirds to include in this game. You should have at least one shorebird for the number of classroom “flocks” you have assembled. Write five clues for each bird that will help the teams



guess the bird's identity. What kind of nest does it make? What type of wetland does it live in? What is the shape of the bill? Does it have a specialized feeding behavior? What countries does it pass through during migration? How have people treated this bird in the past? Does it play an important role in any cultures?

Start off with each bird being worth 60 points. Read aloud one clue at a time aloud. Give the first team an opportunity to guess the identity of the mystery shorebird. Deduct ten points from the bird's point value for every clue that does not produce a correct guess. It may take a team all five clues before it feels confident enough to guess the identity of the bird. If at the end of the round, they guess correctly but needed all five clues, they earn only ten points.

If the first team makes an incorrect guess, pass the play to the next team. It starts at the point value left off by the previous team. Since team members had the opportunity to hear all the previous clues, give them a chance to immediately guess the bird's identity.



Shorebird Jeo-Bird-Y Questions

Describe one important fact about the place where the ocean meets the land.

- Contains a great diversity of life
- Faces powerful natural forces: wind, waves, currents, erosion
- Species must adapt to the twice-daily changing tide--from a relatively cool, underwater or wet environment to a dry area where evaporation concentrates and rain or river flow dilutes salinity levels at low tide

Describe two important physical adaptations of shorebirds (what identifies a bird as a shorebird?)

- Long legs for walking and wading
- Specialized bill for collecting particular food items
- Long, pointed wings for rapid, long-distance flying
- Long toes for support in walking
- Plumage that is well camouflaged
- Most species have an erect posture

What kind of wings do most shorebirds have?

- Relatively long and pointed (although the Oystercatcher has relatively broad, rounded wings)

What type of habitat are most shorebirds found in?

- Open, often wetland habitat

Name a non-wetland habitat that some shorebirds use.

- Grasslands (or human-managed agricultural fields, lawns, golf courses, etc.)

Name one natural environmental cycle that is important to shorebirds.

- Seasons
- Tides (those that are found on the shore at some time of their lives)
- Precipitation (rainy season, dry season)

What do Europeans call shorebirds?

- Waders

About how many species of shorebirds are known in the world?

- 214

How many species of shorebirds breed in North America?

- 48

How many species of shorebirds breed in the North American grasslands?

- Eight (Killdeer, Spotted Sandpiper, Wilson's Snipe, Marbled Godwit, Wilson's Phalarope, Upland Sandpiper, American Woodcock, and the Piping Plover)

What does "morphology" mean?

- Shape, size, color, and other characteristics that describe what an organism looks like--generally morphology refers to external traits, while anatomy refers to either internal or external structure and appearance

Name three shorebird predators that are found in North America.

- Eagles, hawks, gulls, ravens, foxes, people
- Small mammals like weasels, river otters, and ground squirrels may take eggs

Describe two behavioral adaptations of shorebirds.

- They form large flocks during migration.
- They migrate long distances between non-breeding and breeding habitat.
- They have elaborate, ritualized displays associated with courtship and breeding.
- Some form leks.
- They may roost on one leg.

What does "roost" mean?

- As a verb—to rest or sleep.
- As a noun—group of resting birds, or the place where they flock to rest.

What is the purpose of roosting on one leg?

- Like tucking the bill under the feathers, roosting conserves body heat in open habitat
- Roosting also allows the shorebird to rest the other leg

Describe two things to look for when attempting to identify a species of shorebird.

- Size
- Color, any patches, or any spots or streaks on the breast
- Length, curvature, and color of bill
- Leg color
- Presence of any wing stripes or tail pattern
- Feeding behavior (for example picking, prying, running and stopping to probe, steadily probing like a sewing machine needle)
- Call notes heard as bird takes off in flight

What three areas do shorebirds depend on for habitat each year?

- Breeding or nesting
- Migratory stopovers
- Non-breeding

What habitat do most shorebirds spend the most time in?

- nonbreeding.

Do any shorebirds depend on more than three habitats in a year, and if so, what are the others?

- Yes, they often depend on several migratory stopover sites in the spring and in the fall.

Do all Arctic-nesting shorebirds migrate?

- Yes, because ice and snow blanket the Arctic in the winter months.
- Some species of other shorebirds, like Common Snipe and Black Oystercatcher, do remain in the southern parts of Alaska and Canada over the winter.



Name three places that Arctic-nesting shorebirds might be found during our winter months.

- Answers may include the lower 48 States, Hawaii, South Pacific Islands, Central and South American countries.

Describe one reason why shorebirds are important to people today.

- Because they are relatively large, visible organisms that are near the top of the food pyramid, shorebirds are good indicators of wetland health.
- Guano (droppings) returns nutrients to the environment. This is not true for human waste (for example large populations produce a large amount of waste; it is not concentrated and nutrient-rich like bird waste; and it may carry disease).
- People enjoy seeing shorebirds, whether discovering a lone one on a quiet walk or experiencing an awesome migratory flock.
- Shorebirds are predators of some organisms and prey for others, making them a natural part of the food/energy pyramid with their own unique place in the balance of nature and our local wetland ecosystems.

Give an example of what an indicator species can tell us.

- Examples are endless and need be only general. Look for answers that show an understanding that all organisms are affected by certain changes in other organisms (or abiotic factors) in their environment
- They may be affected through their food chain or by changes in their habitat. Any change in condition or numbers of the indicator species may indicate that, for example:
 1. Other shorebirds in the same place in the food chain may be expected to be similarly affected

2. Other shorebirds using the same habitat may be similarly affected
3. Other organisms feeding on the same prey may be similarly affected
4. Other organisms using the same habitat may be in jeopardy too
5. Something is wrong with the shorebird prey items
6. A necessary habitat has been disturbed or destroyed
7. Water quality or amount (as with droughts, floods, and damming) has been altered

Describe the Western Sandpiper (or other local, common shorebird or species students have studied)

- Answers may refer to size, coloration, behavioral characteristics, habitat use, global range, or factors covered in class. Look for answers that show recognition of the species, and that distinguish this species, or whichever one you choose to ask about, from others

Name three organisms that shorebirds feed on.

- Worms, insects, tiny clams, shrimp, ghost shrimp, isopods, amphipods, spiders, beetles, and numerous other invertebrates

Name two shorebird prey items found on the Arctic tundra.

- Adult and larval insects (like crane flies), midges, beetles, spiders, mosquitoes

Name the shorebird prey items that make the Delaware Bay a popular shorebird stopover site during migration.

- Horseshoe crabs and their eggs

Name one species in which the female seldom raises the chicks.

- Phalaropes (any of the three species), Dowitchers (either species), several species of Sandpiper (e.g., Least, Spotted, Purple)

What is the lower back of a shorebird's head called?

- Nape

Where is the flank on a shorebird?

- Side, underwing, and towards the tail (posterior half)

What does biodiversity mean?

- Variety of species and individuals (also generally implies that the number of these individuals will include a variety of traits, types)

Explain how scientists believe adaptations develop.

- All organisms have a certain set of traits (set of genes). Sometimes an individual is born with a trait that differs slightly from others of its species (a mutation). If that different trait gives the individual an advantage in surviving to breed, it may pass on the genes for that trait. The trait may then persist in the species as long as it gives individuals that have it an advantage—or at least the ability to successfully compete and breed. The helpful traits are called adaptations because they help an organism compete to survive long enough to breed successfully

What are three characteristics that define habitat?

- A place where organisms are adapted to find food, water, and protection from environmental elements or a place to breed

Describe one type of shorebird bill and how it works.

- Long, tweezer-like bills are for probing deep below the surface of water or the ground
- Short, tweezer-like bills are for probing right underneath the surface
- Long, curved bills are for sweeping through the water (American Avocet) or probing into the burrows of worms and clams (curlews)



- Relatively short bills are for picking up prey items on the surface (plovers) or snatching flying insects and hopping amphipods (sanderlings)
- Relatively short, sturdy bills are for flipping over rocks to search for prey (turnstones)
- Large, heavy “clothespin” bills are for prying up limpets and opening mussels (oystercatchers)

Describe one physiological adaptation that helps shorebirds make long, strenuous migrations.

- Efficient “fat-loading” (the conversion of food into a useful source of energy)
- Efficient burning of calories (burning few calories per kilometer)

Describe two things that an adult shorebird needs in its breeding habitat.

- Food
- A mate
- A safe place to nest and raise young

Describe two things that a shorebird depends on finding in a migratory stopover site.

- Rest from the long flight
- Food the body can convert into energy for the long flight
- Freedom from disturbance so that it can get all the food and rest it needs

Describe two things that a shorebird depends on finding in its non-breeding habitat.

- Food
- Rest
- Warm or temperate weather (as opposed to the freezing temperatures of the Arctic during these months)

Why are wetlands important shorebird habitat?

- Abundant, available, nutrient-rich food (prey items and vegetation thrive in areas enriched by shallow water)

Why are wetlands important to people?

- Wetlands purify water, are a nursery for wildlife, absorb flood waters, and mix nutrients

Describe two sources of the water in wetlands.

- Rivers, streams, springs, ocean tides, permafrost allowing melting snow or rainwater to pool at the surface

Name a wetland type found within grasslands.

- Prairie pothole or playa lake

Describe three types of wetlands that shorebirds use.

- Ocean beach, tundra, mudflat, freshwater marsh, saltwater marsh, intertidal zone, stream/river corridors (estuaries), prairie potholes

Explain three threats to wetland habitat.

- Draining for development or conversion into cropland
- Damming or diverting water for agriculture (crop irrigation), power source, drinking water, sewage treatment, use in industry, or recreation (artificial lakes or waterways)
- Pollution from agricultural chemical runoff, and runoff through storm drains from streets.
- Accidental oil (especially in coastal habitats) or other chemical spills
- Accidental or purposeful introduction of nonnative (“exotic”) species, some of which outcompete and overtake native (natural and local) species that are vital members of the food chain

Explain two threats to grasslands.

- Development of grasslands
- Over-grazing or farming grassland

Explain one reason why the Arctic is such a good breeding habitat for shorebirds (and waterfowl)

- Billions of insects hatch there each summer and are available as prey
- There is less competition for food and nesting spaces and relatively lower diversity of predators (The animals with which shorebirds share their environment in the winter are left behind in the south when shorebirds migrate.)
- Long daylight hours to feed and low Arctic sun to warm nests on the open tundra
- Besides insects, the tundra provides vegetation such as berries for food

What is the usual number of eggs (“clutch-size”) small shorebirds lay?

- Four

What is the major purpose of the elaborate displays shorebirds take part in early in the mating season?

- To attract a mate

Describe two methods of brood protection

- Nests, eggs, chicks, and brooding parent on the nest all have cryptic coloration (camouflage)
- Distraction displays by the parent (for example, feigning injury such as a broken wing or tail)

Describe one type of shorebird territory, or one common reason why shorebirds defend a territory.

- Mating territory (for example, a place for a male to breed with females or to build a nest)
- Feeding territory, or home range, where an individual defends his or her prey-hunting area

Describe the mating behavior of phalaropes.

- Phalaropes have a type of polygamy known as polyandry, in which the female attracts the male to her territory, may mate with more than one male, and leaves the male to raise the chicks



What is a typical shorebird nest like and what is it called?

- It is called a scrape and is a shallow, inconspicuous depression or nest located on the ground.

Name three important migration stopover sites on the flyway you live in.

- See the Western Hemisphere Shorebird Reserve Network List of Important Shorebird Sites in North and South America and flyway maps in Shorebird Migration Flyways

What is the most serious threat to shorebirds today?

- Loss of habitat

Why are shorebirds so vulnerable during migration?

- They concentrate in huge numbers, which is often a high percentage of the entire population of a certain species, at their migratory stopover sites
- They traditionally use the same sites each year, and if a vital estuary is destroyed, they will not find or stop at an alternative site (even if one is available), but they will fly on to the next traditional stop. They do not have the energy reserves to do this successfully.
- A single storm (which can easily occur in the spring) can wipe out large numbers of shorebirds
- A disturbance or oil spill where a large flock is present can kill many birds
- Wetlands are being degraded and destroyed. Populations of migratory birds are under more pressure each year to find suitable breeding habitat.

Why do shorebirds migrate?

- To take advantage of the abundant invertebrate food items and reduced competition in the Arctic
- Historically, migration probably developed as the ice from the last Ice Age receded

Why do we often see much larger flocks of shorebirds migrating in the spring than the fall?

The three following reasons are all part of the answer:

- In the spring, the shorebirds are in a hurry to take advantage of the short Arctic summers because they need to find a mate, lay eggs, and raise chicks to fledgling stage before the weather turns colder and the supply of invertebrate prey dies off.
- In the spring, the shorebirds are also in a hurry to arrive on the breeding grounds at about the same time as the rest of their species so that they have a good chance of finding a mate. Some species also need to establish territories before all the good sites are taken.
- The fall migration is staggered into different categories. In the fall, young birds take more time to prepare for migration. Parents leave early. Adults that failed at nesting or raising chicks may leave even earlier.

Describe how plants and animals are connected to soil, water, air, and sun.

- They are all connected in an ecosystem
- They are all linked and interdependent on each other
- They rely on nutrient flow
- They all rely on energy from the sun

Explain three ways people can help conserve wetlands and grasslands and the species that live there.

- Prevent pollution
- Keep habitats clean
- Protect important areas for wildlife
- Tell others about the importance of these places for people and wildlife
- Plan development projects carefully so as not to harm wildlife and their habitat



Shorebird Speeches and Listening Tests

Grade Level: upper elementary/middle school, upper middle/high school

Duration: at least two 45 to 60 minute class periods for research and speeches

Skills: communication, presentation, collection and interpretation of data

Subjects: language arts, science, and math

Concept

- Applying knowledge of the connections between shorebirds and the ecosystem they share with people and other plants and animals demonstrates understanding of the information and the ability to use it.

Vocabulary

Since this is a review and sharing activity, there are no specific vocabulary words.

Overview

Students design a shorebird speech to present to other students in their class, another class, or other audience.

Objectives

After this activity, students will be able to:

- List two elements of a good presentation
- Give at least two examples of research resources
- Write a summary paragraph on a shorebird topic of their choice

Materials

- Shorebirds research materials

Introduction

Since this is a review and sharing activity, there is no introductory material.

Activity Preparation

1. Arrange a time for the class to present speeches to its own class, a lower or higher grade level, parents, a school assembly, or some other group.

2. Prepare a list of suggested research materials (for example, books, magazines, Shorebird Profiles and other student readings found in the appendices, and the names of people willing to participate in phone interviews).

Procedure

1. Have each student research and prepare an informative speech on some aspect of shorebirds. The research can include use of class and field trip notes, library books, and interviews with knowledgeable people, newspaper or magazine articles, or films.
2. Discuss with the class what makes a good presentation. What kinds of presentations hold their interest? What makes information easier to understand? Write the following presentation guidelines on the board.

Presentation Guidelines

- Provide factual information in a clear, concise manner that is easily understood by people who know little or nothing about the topic.
 - Use graphics to help communicate and illustrate the messages (poster-sized drawings, slides, handouts, overhead transparencies, or the use of the chalkboard).
 - Write down three-five questions to answer in the presentation.
3. If students are presenting their speeches to the class or other audiences, have them practice before their own class, and get feedback. Be sure to put a time limit on speakers.

4. To determine how well students listened, combine the student-written questions into one quiz. At the end of all the presentations, hand out the quiz. Relative scores on the test will indicate how well each student listened.

5. To determine how well each presenter communicated, hand out “mini-tests” after each presentation, using the presenter’s self-written questions. Tabulate the score for each presenter and answer these questions:

- Were most people in the class able to answer the questions? What percent correctly answered each question? What percent incorrectly answered each question?
- Did many students not answer or incorrectly answer one or more of your questions?
- Did you provide the answer to the question(s) in your speech?
- How could you improve your speech to better communicate the point?

Additional Activities



Cultural Connection

As a speech option, allow students to research a culture in which a shorebird breeds, migrates, or winters, and present information on how that culture views and values shorebirds and/or birds in general.

Shorebird Research Report

Ask students to follow up their speeches with written reports. What are the differences between the amount and complexity of information in a speech and a research report? What information should they include that they left out of their speeches? What kind of supporting graphics would be appropriate here that would not be useful in a speech?



Peeps and Predators Game

Grade Level: lower elementary, upper elementary/middle school

Duration: 15 to 25 minutes

Skills: critical thinking and teambuilding

Subjects: science and physical education

Concept

■ Applying knowledge of the connections between shorebirds and the ecosystem they share with people and other plants and animals demonstrates understanding of the information and the ability to use it.

Vocabulary: Since this is a review, there are not specific vocabulary words.

Overview

Students review shorebird information they learned on their field trip by pretending to be either a shorebird or a predator, and they alternately chase each other in response to true or false shorebird statements.

Objectives

After this activity, students will be able to:

■ Differentiate between correct and incorrect information about the shorebirds they saw on their field trip.

Materials

- A large area where students can run
- A list of true and false statements about shorebirds (included here)

Introduction: Since this is a review, there is no introduction.

Activity Preparation

1. Review the list of true and false shorebird statements provided at the end of this activity. You may wish to edit the statements to be age-appropriate for your group.
2. Add a few statements of your own, in the spaces provided, that reflect the specific shorebird topics your students studied.

Procedure

1. Divide the class into two teams. Ask one team to pick the name of a local shorebird to represent their team. Ask the other team to select a predator to represent their team that would eat their “shorebird” classmates.
2. Line up the two teams, facing each other, about two feet apart. About 15 feet behind each team, draw another line for “home base”, an area where the teams are safe from each other.
3. Read one of the shorebird statements out loud. If the statement is true, the predators chase the shorebirds, trying to catch them before they reach their “home base”. If the statement is false, the shorebirds chase the predators. Anyone tagged by a member of the opposite team must join the other team.
4. If the answer is not obvious to the players, you will get some of the predators and shorebirds running toward each other, and others running to their “home bases”. During the pandemonium, remain silent and neutral. When the action has calmed down, reveal the correct answer and explanation.

Additional Activities



Cultural Connection

Add these value statements:

■ To protect shorebirds and their habitat, we must work with other countries along shorebird flyways. TRUE!

■ Understanding other cultures is important for our daily lives and environmental conservation. TRUE!

■ We do not learn attitudes, beliefs, and behaviors from the culture we grow up in. FALSE!



Peeps and Predators Game

True Shorebird Statements

Here are true statements about shorebirds to get you started. Reword them to be age-appropriate for your group.

1. Shorebirds migrate the longest distances of all groups of birds.
2. Shorebirds nest on the ground.
3. Gulls are predators of shorebird eggs and chicks.
4. Many shorebirds nest in the Arctic tundra.
5. Shorebirds need a healthy chain of habitat to rest and feed when they migrate.
6. Shorebirds have long, pointed wings for flying fast and long distances.
7. The biggest threat to shorebird survival is the loss of habitat.
8. Some shorebirds are found in grasslands.
9. Shorebirds eat mostly aquatic invertebrates, insects, and insect larvae.
10. We can help shorebirds by not disturbing them and by protecting their habitat.
11. Shorebird migration routes are called flyways.
12. Shorebirds are part of an ecosystem linked to other species and nonliving parts.
13. Shorebirds are found in habitats with other wildlife species like gulls, mice, and mosquitoes.

Write additional true shorebird statements that reflect the shorebird topics your students studied.

14.

15.

16.

17.

18.



Peeps and Predators Game

False Shorebird Statements

Here are false statements about shorebirds to get you started. Reword them to be age-appropriate for your group.

1. You can find shorebirds in almost any habitat.
(Shorebirds are found primarily in open areas—wetlands and grasslands near water. A few are truly upland species)
2. Shorebirds eat fish and small amphibians.
(Most shorebirds have bills designed for probing, picking, and gleaning invertebrates from soft mud, sand, or dirt.)
3. Shorebirds are solitary migrants.
(Shorebirds forms large flocks of thousands of birds during migration, though some shorebirds travel in small groups.)
4. Shorebirds build fancy nests in trees like forest songbirds do.
(Most shorebirds nest on the open tundra where there are no trees and very little cover. They nest on the ground in very basic nests called scrapes that might be lined with moss, grass, or lichen.)
5. It is easy to tell male and female shorebirds apart.
(In most cases, both the males and females are dull colored and similar looking. Their coloring and pattern of spots, speckles, and stripes helps to camouflage them in the open habitats where they live.)
6. Shorebirds have webbed feet for walking on the mud and sand.
(Webbed feet are a characteristic of ducks and geese, not shorebirds. Shorebirds tend to have long toes that stabilize them as they walk on slippery mud and sand. Phalaropes use

their partially webbed feet to spin on the surface of the water. The whirlpools they create flush invertebrate foods to the top of the water.)

7. Shorebirds are very tolerant of people coming close to them and their nests.
(Shorebirds are extremely wary of people and will move away from their nests and their feeding areas if people get too close.)
8. All shorebirds nest and winter on coastal wetlands in the southern areas of the United States.
(Shorebirds are long-distance migrants. They nest in extreme northern climates like the Arctic tundra to take advantage of the large number of insect, insect larvae, and aquatic invertebrate foods. After the breeding season, they fly thousands of miles south to wetland and grassland habitats in warmer climates.)
9. Generally, shorebird populations are on the rise.
(Actually, biologists believe that many species of shorebirds are declining due to loss of habitat, pollution, increase of predators, and disturbance from people.)
10. The Spotted Sandpiper, the Black Oystercatcher, and the Great Blue Heron are all shorebirds. *(Though they share the shore habitat, herons are considered wading birds not shorebirds.)*
11. Shorebirds are the only species of birds that use wetlands and grasslands.
(Many species of birds—including songbirds, waterfowl (ducks, geese,), waterbirds (herons, and egrets)— use wetland habitats.)

Write more false shorebird statements that reflect the shorebird topics your students studied. Include the correct information as review for your students.

12.

13.

14.

15.

16.

17.

18.

19.

20.

21.



Shorebird Bubble Map or Concept Map

Grade Level: upper elementary/
lower middle school, upper middle
school/high school
Duration: one 30-minute class
period

Skills: vocabulary, discussion,
communication, presentation, and
visualization
Subject: science and language arts;
fine arts (with additional activity)

Concepts

- Applying knowledge of the connections between shorebirds and the ecosystem they share with people and other plants and animals demonstrates understanding of the information and the ability to use it.

Vocabulary

- interconnected
- habitat
- food web
- bubble map or concept map
- environmental factors

Overview

By creating a bubble or concept map, students explore the interconnectedness of the environmental factors within a shorebird's habitat and its characteristics of behavior, adaptations, migration, and breeding biology.

Objectives

After this activity, students will be able to:

- List at least five elements of the assigned topic.
- Describe how these elements are related to one another.
- Draw a bubble map to visually represent this information.

Materials

- Chalkboard
- Blank, unlined 8 1/2" x 11" paper
- Copies of any student readings you want to use (available in a variety of activities in the educator's guide)

Introduction

Bubble and concept maps are visual representations of the interconnectedness of elements (terms) listed for a particular topic. The bubble drawn around each term represents a sphere to which many lines of connection can be drawn to other terms. It is similar to doing a food/energy web, but you can use any topic you have covered with your students.

The bubble map activity for younger students will demonstrate how well students understand the topic they have learned. For older, more advanced students, the concept map will demonstrate their knowledge of the connections among the terms in each bubble through words and phrases. It can also be done before and after your lesson to measure how much students have learned and understood.

Activity Preparation

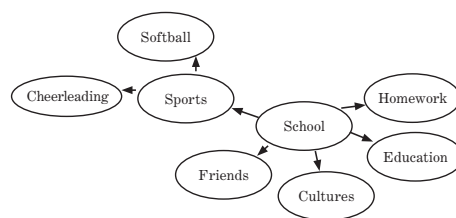
1. Decide on the topic you will use for this activity.
2. Photocopy the handouts you choose to provide the students or student teams.

Procedure

Optional Demonstration

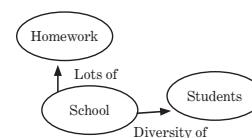
1. Have students choose a topic they know such as sports, music, or their school. Then have each student or groups of students provide a term (noun or verb) related to the topic. For example, if your topic is school, write "school" on the board with a circle (bubble) around it.

Students then brainstorm related terms that describe their topic. If it is 'school' then related terms might be "education", "friends", "sports", "homework". Write each of those terms in a separate bubble and draw lines to the main term "school". You could take it to the next step by asking students to relate more terms to the terms they just came up with such as "sports"= "baseball", "softball", "cheerleading" etc.



Bubble Map

Have older students demonstrate the relationship among the terms with a few words or phrases. For example, school→gives us a lot of →homework, or school→there is a diversity of→students. Students should continue until they have connected all the terms with words.



Concept Map



Activity

1. Choose your topic. Decide whether students will work alone or in groups.
 - For younger students, brainstorm with the entire class a list of terms related to the topic. Then have each student or team make a bubble map connecting the words.
 - For older students, assign the class a central topic. Have students, individually or in teams, brainstorm terms related to the central topic and connect them to the assigned topic. Then have each student or team demonstrate their understanding of the relationship among terms by connecting them with words.

Note: Remind students that each bubble map or concept map will be different. There is no one right map.

2. Write the instructions on the board for reference.

Instructions for Younger Students

- Start with one central bubble with the term inside.
- Include all the brainstormed terms on the board in your bubble map.
- Include at least three of your own terms in your bubble map.
- Each term must be connected to another term.

Instructions for Older Students

- Start with one central bubble with the assigned central term.
- Individually (or in a team) brainstorm at least five terms to connect to the central bubble.
- Write phrases or words to show the relationships among the terms.

Example: “Nest” is the central topic in this bubble map. This could be turned into a concept map by using words and phrases to demonstrate the connection among terms, such as “Nest” is for “eggs”. “Nest” needs “protection”. “Nest” is inside “territory.”

Additional Activities



Cultural Connection

Have students include aspects related to culture as part of the topic they depict through their bubble or concept map.

Translating Words into Pictures

Ask each student to convert the ideas on his or her bubble map into a poster. Each item listed should be part of a shorebird scene. Let them select their own art materials (crayons, paint, charcoal pencil) and species that would be found there. Encourage them to include elements like rocks, grass, insects, other birds, and predators that identify the habitat.

Human Habitat Bubble Map

Have students draw another bubble map, this time based on brainstorming about “humans” and their habitat. Alternatively, the central circle (theme) can be their names.



Arctic Nesting Shorebird Sample Bubble Map

